IN THE SPECIFICATION:

Please the amend the specification as follows:

Please replace the paragraph starting from page 1, line 22 with the following new paragraph.

As ~~show~~ shown in Fig. 1, a read-only ~~doubly layer~~ double-layer disc as one example of the DVDs has a double-layer structure composed of a first recording layer (hereinafter, referred to as the layer 1 as needed) at the closer end to the pick-up as viewed from the reading side and a second recording layer (hereinafter, referred to as the layer 2 as needed) at the farther end (deep side) from the pick-up. The layer 1 is a translucent film to transmit a beam of light, so that a signal can be also read out from the layer 2, and for this reason, the film thickness and materials of the layer 1 have to be selected adequately. The layer 2 is made of a reflection film.

Please replace the paragraph starting from page 4, line 23 with the following new paragraph.

Firstly, the following description will discuss inter-layer leakage of one signal into the other in the case of reproduction. In a double-layer disc before recording, average reflectance of the pre-pit regions PPR is higher than that of the rewritable regions RWR in each recording layer. After data is recorded, non-recorded (crystal) portions and recording marks (amorphous) reside in the rewritable regions at an approximately fifty-fifty ratio. In the case where no recording marks are recorded in the ~~pre-pits~~ pre-pit regions, the entire pre-pit regions remain in a non-recorded (crystal) state, and because the non-recorded (crystal) portions have higher reflectance than the recording marks (amorphous) portions, average reflectance of the ~~pre-pits~~ pre-pit regions PPR is higher than that of the rewritable regions RWR.

Please replace the paragraph starting from page 5, line 11 with the following new paragraph.

As shown in Fig. 2, in the case where the position of the ~~pre-pits~~ pre-pit regions PPR on the layer 1 is shifted from the position of the ~~pre-pits~~ pre-pit regions PPR on the layer 2, that is, in the case where the pre-pit regions PPR on the layer 1 are superimposed on the rewritable regions RWR on the layer 2, at the time of reproduction from the rewritable region RWR on the layer 2, reflection light from the layer 1 that leaks into reflection light from the layer 2 and is superimposed thereon has different intensity depending on whether the reflection light is from the pre-pit region PPR or from the rewritable region RWR. This causes noises and poses a problem that a signal cannot be reproduced precisely from the layer 2.

Please replace the paragraph starting from page 6, line 8 with the following new paragraph.

After data is recorded, the non-recorded (crystal) state (that is, spaces between the recording marks) and the recording marks (amorphous) state reside in the rewritable regions at an approximately fifty-fifty ratio. On the other hand, the ~~pre-pits~~ pre-pit regions remain in the non-recorded (crystal) state. Because the non-recorded (crystal) portions have lower transmittance than the recording marks (amorphous) portions, the ~~pre-pits~~ pre-pit regions on the layer 1 that remain in the non-recorded (crystal) state as a whole have lower average transmittance than the rewritable regions on the layer 1 after data is recorded.

Please replace the paragraph starting from page 7, line 15 with the following new paragraph.

A multi-layer information recording medium of the present invention is a multi-layer information recording medium capable of recording/rewriting information, provided with a plurality of recording layers sequentially layered between which spacer layers lie, each recording layer being made of a material that changes reflectance upon irradiation of a beam of light and thereby being capable of recording information as a change in reflectance, each recording layer being provided with alternately and adjacently aligned information rewritable regions and pre-pit regions where predetermined information has been written, average reflectance of the rewritable regions being different from average reflectance of the ~~pre-pits~~ pre-pit regions. In this construction, the pre-pit regions have recording marks that lessen a difference between the average reflectance of the rewritable regions and the average reflectance of the pre-pit regions.

Please replace the paragraph starting from page 9, line 4 with the following new paragraph.

In the multi-layer information recording medium according to the present invention, each of the recording marks recorded in the ~~pre-pits~~ pre-pit regions may be a non-modulated continuous recording mark.

Please replace the paragraph starting from page 9, line 8 with the following new paragraph.

A recording apparatus of the present invention is a recording apparatus for recording/rewriting information by irradiating a beam of light to a multi-layer information

recording medium capable of recording/rewriting information and provided with a plurality of recording layers sequentially layered between which spacer layers lie, wherein each recording layer is made of a material that changes reflectance upon irradiation of a beam of light and thereby is capable of recording information as a change in reflectance, each recording layer is provided with alternately and adjacently aligned information rewritable regions and pre-pit regions where predetermined information has been written, and average reflectance of the rewritable regions is different from average reflectance of the ~~pre-pits~~ pre-pit regions. The apparatus includes a circuit for generating a recording mark signal for recording a recording mark of a predetermined length in each of the pre-pit regions while the beam of light is irradiated on the pre-pit region.

Please replace the paragraph starting from page 13, line 2 with the following new paragraph.

The multi-layer disc is, for example, as shown in Fig. 3, a double-layer disc of a CAV (Constant Angular Velocity) system, in which pre-pit regions PPR in each of the layers L1 and L2 are formed radially at a constant angle from the center in a spokes-wise fashion, so that a plurality of rewritable regions RWR are defined. The pre-pit regions on the layer L1 and those on the layer L2 may be formed at the same position or shifted from each other so as not to be superimposed. The ~~pre-pits~~ pre-pit regions PPR are formed in a spokes-wise fashion from the center in the CAV system multi-layer disc, but in a CLV (Constant Linear Velocity) system multi-layer disc, they are formed periodically in the disc tangential direction, so that they can be formed evenly or almost evenly across the multi-layer disc. Further, in a multi-layer disc of a zone CAV or CLV system as a combination of the CAV and CLV systems, as shown in Fig. 4,

sectors of the rewritable regions RWR are defined by the pre-pit regions PPR serving as the boundaries.

Please replace the paragraph starting from page 13, line 20 with the following new paragraph.

As shown in Fig. 5, in each recording layer of the multi-layer disc, the rewritable regions RWR where data can be recorded or erased, and the ~~pre-pits~~ pre-pit regions PPR where information including addresses and recording timing are recorded in the form of a plurality of emboss pits EP are aligned alternately along the tracks. Also, each recording layer of the multi-layer disc is provided with a spiral or concentric convex groove tracks GV and a spiral or concentric concave land tracks LD pre-formed alternately. In Fig. 5, each groove track GV is illustrated linearly, but it may be wobbled at a frequency corresponding to the number of revolutions of the multi-layer disc for practical use. Information is recorded in at least one of the groove tracks GV and land tracks LD.

Please replace the paragraph starting from page 14, line 7 with the following new paragraph.

In order to record data into the multi-layer disc, the pre-pits regions PPR and rewritable regions RWR in the recording layers are scanned by a beam of reproducing light (reading power) with low intensity to detect land pre-pits LPP and groove pre-pits GPP in the ~~pre-pits~~ pre-pit regions, whereby the position of a track where data is to be recorded is determined. Meanwhile, a beam of recording light (writing power) with high intensity and modulated according to the data is irradiated to achieve a focus on the rewritable regions on that track. Here, portions

irradiated by the beam of recording light is heated and cooled abruptly, so that the medium layer is turned into an amorphous state, and for example, recording marks Mk with low reflectance, which is different from the reflectance of the surrounding crystal, are formed on the land and groove track portions shown in Fig. 5. In short, user data is recorded in the form of the recording marks (in the amorphous state) in the non-recorded (crystal) portions within the rewritable regions.

Please replace the paragraph starting from page 15, line 16 with the following new paragraph.

In the double-layer disc of the present embodiment shown in Fig. 5, recording marks LMk are formed in the ~~pre-pits~~ pre-pit regions PPR to lessen a difference in average reflectance between the pre-pit regions PPR and the rewritable regions RWR. More specifically, in the present embodiment, as shown in Fig. 6, a recording and reproducing apparatus described below records the long recording marks LMk in the mirror portions Mrr of the pre-pit regions PPR on the layer L1 in the double-layer disc arranged so that the ~~pre-pits~~ pre-pit regions PPR on the layer L1 are not superimposed on those on the layer L2, whereby an approximately fifty-to-fifty area ratio is achieved between the non-recorded (crystal) portions and the recording marks (amorphous) in the pre-pit regions PPR and rewritable regions RWR. Consequently, the mirror portions in the pre-pit regions on the layer 1 are turned into the recorded (amorphous) state, and average transmittance (reflectance) of the ~~pre-pits~~ pre-pit regions and average transmittance (reflectance) of the rewritable regions (after data is recorded) on the layer 1 are almost equal to each other, thereby reducing a change in quantity of reflected return light passing through the layer 1 at the time of reproduction from the layer 2.

Please replace the paragraph starting from page 16, line 11 with the following new paragraph.

Because the recording marks LMk recorded in all the ~~pre-pits~~ pre-pit regions make little difference in average transmittance or reflectance between the rewritable regions and pre-pit regions in each recording layer, the same effect can be achieved with a double-layer disc in which the ~~pre-pits~~ pre-pit regions PPR on the layer L1 and those on the layer L2 are superimposed.

Please replace the paragraph starting from page 17, line 10 with the following new paragraph.

Non-modulated, continuous, and long recording marks LMk are recorded in the mirror portions Mrr. If the recording marks LMk are continuous and long marks, even when crosstalk occurs due to the recorded recording marks at the time of reproduction from the emboss pits in the adjacent pre-pit region, the crosstalk takes a constant value. Hence, the crosstalk does not adversely affect the reading from the pre-pit regions at all. By recording the recording marks in the ~~pre-pits~~ pre-pit regions in this manner, an approximately fifty-fifty area ratio is achieved between the recording marks and the spaces between the emboss pits in the ~~pre-pits~~ pre-pit regions and rewritable regions. Hence, it is possible to eliminate a difference in transmittance between the ~~pre-pits~~ pre-pit regions and rewritable regions in the recording layer at the irradiation side (for example, the layer 1). Consequently, it is possible to reproduce a signal precisely from the deep recording layer (for example, the layer 2).

Please replace the paragraph starting from page 17, line 27 with the following new paragraph.

In the case of Fig. 6, for example, given 20 μm as a film thickness of the spacer layer, 0.85 as the numerical aperture NA, and 1.6 as the refractive index n of the spacer layer, then, when the focus is achieved on the layer 2, the spot size on the layer 1 is a little less than 30 μm. Also, given 0.3 μ as the track pitch, then the pitch of the recording marks recorded in the ~~pre-pits~~ pre-pit regions is 0.6 μm. Hence, the recording marks recorded in the ~~pre-pits~~ pre-pit regions are not resolved at all, because the pitch of the recording marks is too narrow compared with the spot of a little less than 30 μm on the layer 1. Accordingly, it is possible to change only average transmittance (or reflectance).

Please replace the paragraph starting from page 18, line 12 with the following new paragraph.

The above description described that the non-recorded (crystal) portions have high reflectance, that is, low transmittance, and the recording marks (amorphous) portions have low reflectance, that is, high transmittance. It should be appreciated, however, that the opposite characteristics are also possible depending on the properties of the recording layers. More specifically, the non-recorded (crystal) portions may have low reflectance, that is, high transmittance, and the recording marks (amorphous) portions may have high reflectance, that is, low transmittance. In the present invention, a fact that these two portions have different reflectance or transmittance is important, and the same advantages can be achieved with either of these characteristics. The present invention is applied to a multi-layer disc provided with ~~pre-~~

~~pits~~ pre-pit regions having average reflectance different from average reflectance of the rewritable regions. To have different average reflectance means to have different average transmittance. Hence, the present invention can be also applied to a multi-layer disc provided with ~~pre-pits~~ pre-pit regions having average transmittance different from average transmittance of the rewritable regions. The present invention is not limited to the land and groove structure, and can be applied flexibly to other types of discs provided with the ~~pre-pits~~ pre-pit regions and rewritable regions without lands or grooves.

Please replace the paragraph starting from page 24, line 25 with the following new paragraph.

The present embodiment described the case where the recording marks are recorded in the ~~pre-pits~~ pre-pit regions while recording in the rewritable regions is performed. However, the recording does not have to be performed simultaneously in the rewritable regions and in the pre-pit regions, and the disc may be initialized so that the recording marks are pre-recorded in the pre-pit regions alone.

Please replace the paragraph starting from page 32, line 20 with the following new paragraph.

An apparatus having the above-described recording control circuit is used, and as shown in Fig. 14A, a beam of light is focused on the layer 1 of a double-layer disc of the land and groove structure in the non-recorded state, and reproduction from the emboss pits in the pre-pit regions PPR is performed in the disc tangential direction. Subsequently, predetermined recording, that is, recording into the rewritable regions RWR is performed. Here, the operation

is the same as that of the above example except that the recording is not performed in the mirror portions of the groove tracks and land tracks in the ~~pre-pits~~ pre-pit regions PPR. After the recording, as shown in Fig. 14B, a beam of light is focused on each recording layer, and reproduction from L1, and further, reproduction from L2 are performed.